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ABSTRACT

This report describes TNP (Technology and New Pedagogy in Open Learning), a 3-year cross-disciplinary research project undertaken with collaboration from all three main areas of the Aalborg University Center (humanities, social sciences, and technical sciences). Noting that TNP combines insight from educational policy, communication theory, and pedagogy, and aims at developing educational technologies to be applied in distance education, the report presents a conceptual clarification of the terms "open learning" and "distance education" and describes the main dimensions of the project: (1) the political and sociological dimension; (2) the pedagogical dimension; (3) the communicative dimension; and (4) the didactic dimension in engineering, social sciences, and foreign languages. A list of project participants is included. (36 references) (Author/GL)

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Technology & New Pedagogy in Open Learning

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**TNP - SERIES NO. 2
PROJECT DESCRIPTION**

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This publication has been elaborated within the scope of the research project called TNP - Technology & New Pedagogy - at the Aalborg University Centre in the northern part of Denmark.

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Furthermore, attached to the project is secretary, technical, and students assistance.

If necessary, the research fellows can be assisted by additional research workers during the project period.

You are most welcome to contact us for further information on the project. Please contact:

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Technology & New Pedagogy in Open Learning

This issue of the TNP-series is a brief project description of the research project called TNP - Technology & New Pedagogy in Open Learning.

The TNP is an cross-disciplinary research project running for 2 1/2 years. It includes collaborators from all 3 main areas of the Aalborg University Centre (AUC) - i.e. collaborators from the humanities, the social sciences and the technical sciences. The project is financed through a grant of DKK 2.3 million from the basic research means of the AUC.

The project took effect as from January 1989 and is running until August 1991.

The TNP combines insights from educational politics, communication theory and pedagogical science with the aim of evaluating and developing pedagogical technology applied in distance education.

The basis of the project is experience in open learning at a national and international level. In the light of this, the project will strengthen the basic research within the part of the technological and pedagogical area, which deals with open learning. The aim is e.g. to contribute to the fact that the technological development in open learning starts from and is included in a dynamic interaction with both new pedagogic-didactic and communicative reflections and acknowledgments.

That is why the project is called: Technology & New Pedagogy.

The Aalborg University Centre, October 1989

Annette Lorentsen (project leader)
Bodil Brander Christensen, Lone Dirckinck-Holmfeld,
Anette Kolmos, Erik Laursen, Palle Rasmussen and
Jan Brødslev Olsen

1. The Background of the Project

Today, one of the central political thoughts in Denmark in adult education is to establish a coherent adult education system called "open adult learning". By this an education and a study method is to be understood, which makes it possible to study on the basis of the real qualifications of the participants and, at the same time, maintain the participants' attachment to the labour market (cf Haarder 87). The attachment to the labour market and the age of the participants imply that an open adult education system must consider possible geographical and family-like barriers.

Such potential education barriers are due to the fact that today one is very interested in distance education as a central bid for an organization form in the "open adult learning". Especially, in educations and further educations at a university level, where the possible participants for an "open adult learning" must be regarded as widely spread as regards geography due to the degree of specialization and the level of the courses, distance education will in one or another way play an important part. The combination of distance education and open learning is becoming still more important - both as regards educational politics and pedagogy.

During the daily work with the courses of distance education at the Jutland Open University (Jysk Åbent Universitet) - which is the institution in Denmark that has the greatest experience in distance education at a university level - we can see that there is an outstanding need for an additional development of distance education in Denmark - both as regards practical experiments and research. The TNP should be regarded as a reply to this need.

In the open learning area, a basic research should - as it is

supposed to proceed in the scope of the TNP - start from and develop existing relevant research milieus. At the AUC there are 3 such milieus, namely PICNIC at the humanities (cf below), the educational research milieu within the social scientific faculty, and the "Fats"-milieu (The Department for Technology and Society) within the technical-scientific faculty. As regards research, a linking together of these milieus could create an exciting possibility of linking together the humanistic, the social-scientific, and the technological research approaches. Furthermore, at each faculty, there will be established a background group with special reference to discussions and communication.

Distance education and technology nationally and internationally

The Jutland Open University was founded in 1982 as co-operation between the humanistic faculties at the University of Århus, the Aalborg University Centre, and the Southern Jutland University Centre. Since then, there has been arranged open university courses under these auspices - but first and foremost within the humanistic educations. During the last years, the University of Odense, the University Centre of Roskilde, and the University of Copenhagen have also arranged open university courses - likewise with a background in the humanistic faculties.

Through the 80'ies, persistent attempts have been made to establish open learning at a university level within a broader spectrum of studies - perhaps in the shape of an "Open Danish University". The present situation is that, in January 1989, the Minister of Education, Mr. Bertel Haarder, has introduced a bill of "Part-time vocational education for adults" in the Danish Parliament - a bill, which suggests the establishment of an open learning system.

The new communication technologies (computer mediated communication systems with text and picture transmission, interactive video, EDP-based tutorials etc) give new possibilities and conditions of organizing the pedagogical and communicative processes in connection with open learning - especially, they create new possibilities of organizing education as distance education.

As a part-initiative in this area, during the period of 1987-1989, the Jutland Open University has entered into a study contract with the "IBM-Denmark" concerning the development and the testing of a computer mediated communication system for its distance courses. The aim of this computer mediated communication system was to strengthen the possibility of a communication between the distance students themselves and the teachers. This should imply better possibilities of co-operation in spite of a geographical spread and a better possibility of building up and maintaining an identity as a student through a professional and social integration process.

In connection with this experiment, a research project called PICNIC has been established at the Aalborg University Centre. The project is dealing with the application of computer mediated communication systems in distance education within higher education. It is supported by the Research Council for the Humanities and will be finished at the end of 1989. The participants of PICNIC will form a part of the TNP, which by this becomes both a continuation of the research activities which have been started in PICNIC (cf the publications called PICNIC-NYT) and an extension of these activities. The TNP will approach other medias than the computer mediated communication systems and will approach other main areas than the humanities, which has been the empirical area of PICNIC.

The possibilities of technology in distance education are also tested internationally. The Open University in England has

established a tradition in the use of media such as radio, TV, and computer assisted or computer based education as an integral part of distance education. Moreover, as an attempt to establish more open communication patterns in distance education, experiments have been made all over the world with the application of more flexible forms of technology during recent years, e.g. computer mediated communication systems, which typically include electronic communication facilities such as electronic mail, computer mediations and external data bases as regards a number of systems.

However, one realizes that besides PICNIC's research works, there is not much actual research-based experience in the pedagogic and communicative possibilities and limits of technology in distance education. While having many hopes, there is not much knowledge.

This project is - through the formulation of knowledge - an attempt to present qualified bids within the area - defined as technology and new pedagogy in open learning. It is important to notice that the knowledge and insights which can be acquired within the TNP might inspire considerations of technology and new pedagogy within the traditional education system.



2. The Purpose of the Project

The project is especially aiming at exploring the conditions and the possibilities that the new communication technologies give the communicative relations, the learning processes and the very pedagogic-didactic organization of the education in *open learning* at a university level.

In its central pedagogical principles of problem orientation, interdisciplinarity, and project and group work, the Aalborg University Centre has an idea of how the future open learning system could be managed educationally. Both perceived from a research strategical and a professional point of view, we are therefore very interested in exploring fundamental questions of pedagogy in relation to project of organized study and the new communication technologies. We are especially interested in examining these conditions in relation to education organized at a distance basis, as we expect it to be the predominant way of organizing education as regards open learning.

The TNP is built up in a cross-faculty and interdisciplinary way.

We are aiming at studying some transverse ways of presenting the problems:

- The term "open learning" including its relation to distance education and new technology.
- Open learning and distance education seen in the context of the politics of education and from the viewpoint of educational sociology.
- Project pedagogy - especially the changed conditions of the learning processes by the application of the new communication technologies and the changed conditions of basing distance education on a project pedagogy concept.

- Communicative competence as an integrated and necessary part of the pedagogical processes and as an independent problem area in connection with the new communication technologies.
- Questions of teaching in different subjects in connection with distance education and new technology in distance education.

It is our intention that the project workers shall start from and concentrate upon different ways of presenting the problems. But, it is a central perspective to build up a common theoretical definition. Profound studies of the terms "open learning" and "distance education" are very essential. Furthermore, we will develop common terms and models as an evaluation of pedagogical technology applied in distance education.

Accordingly, a survey of the knowledge interest of the project could be regarded as follows: (please see page 10).

As an important way of fulfilling the general purpose of the project, we will collect and try to sum up Danish and foreign experience in the application of the communication technologies in distance education, just as we will exchange knowledge with Danish and foreign researchers.

In this connection, we can mention that we have already (through PICNIC) built up a number of national and especially international contacts to central development and research milieus within this area (in England, USA, Canada, Australia, etc).

We will value the international relations highly as a much older tradition for distance education exists abroad - because of large geographical distances. A further argument for intensive international contacts and studies is that all over the world, people

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Educational politics - Educational sociology

Project pedagogy. Learning and knowledge processes

Communication. Communicative competence

Teaching of engineering

Teaching of social sciences

Teaching of foreign languages

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are staking very much on the new communication technologies in connection with the area of distance education. A great receptiveness to the exchange of experience exists, but it is also a question of obtaining influence in preparation for securing a development of technology that specifically can be used for pedagogical purposes. Besides the importance of including the pedagogy in the process of technology development, there exists also a great cultural dispute as to which of basic pedagogical principles that should found the system design. In this very cultural dispute, there has internationally been shown great interest in the principles of the project pedagogy, in group work, and in the emphasizing of learning. This gives the project pedagogy a possibility of influencing the development of software for the distance education area.

Even though if the TNP is a basic research, we have chosen to value the communication of our research highly, because we believe that the basic questions on which we are working, could inspire other researchers, decision-makers, project makers, and teachers.

We will inform of our project when participating in conferences and networks, through research communicating articles, and by publishing a series during the course of the project (the TNP-series). This text will be our first issue.

Furthermore, we will, at the final stage of the project, work out more coherent information on the obtained results of the project.

3. The Dimensions of the Project

As mentioned earlier and as shown in the model on page 10, the research areas of the TNP could be divided into four dimensions, which will be studied both separately and consecutively: the political and sociological (3.2), the pedagogical (3.3), the communicative (3.4), and the subject didactic dimension (3.5). These four dimensions imply a thorough study of the terms "open learning" and "distance education". This will be taken up in a phase of conceptual clarification. (3.1).

3.1 Open learning and distance learning

The term open learning is used in several different senses:

- education where organized (and qualifying) learning processes do not necessarily have to be available at an educational institution. This kind of education is thus mainly based on distance education, but might also be based on week-end seminars, project groups working locally, etc. In other words, in this sense of the openness term, admission to education is emphasized without regard to geographic residence.
- education where participation is not determined by a full-time contribution. In other words, in this sense of openness, you attach great importance to the possibility of combining participation in a course with a job and a family life.
- education which does not demand formal qualifications (but might demand real qualifications). The perspective is here an openness towards social groups, which traditionally have had no share in the benefits of education.
- education which departs from the formalized acquisition of

predetermined curricula and which instead opens itself to other elements of the learning process: curiosity, experience, social relations to other participants, etc.

In concrete education initiatives, you can use several of the above-mentioned definitions of openness. But there might be a tension between the different types of openness. The pedagogical openness (non-formalized acquisition of knowledge) could be transferred to a school and in that way be closed to those people who cannot be present at the school. And distance education can quite well be strongly formalized transmission knowledge and thus be closed to more spontaneous experience.

The above elements of open learning will all be a part of this research project, but with different emphasis. Education which do not demand physical presence at an institution and which can be carried through simultaneously with having a job and a family life will be the predominant theme.

The project deals first and foremost with education at a higher level (e.g. under open university), but the aim is to give a more fundamental characterization of open learning based on distance education by means of questions like: At what kind of openness are we aiming? And what kinds of openness are possible in a form of education that is mainly based on distance education?

Apart from the term "open learning", it is necessary to develop broad knowledge of *the distance education field* which is the general context of the studies of the TNP.

Firstly, it is characteristic for the term distance education that there is no agreement on the terminology. E.g., distance education is named as off-campus study, correspondance study, open learning, distance education etc. (cf Keegan 83).

Secondly very few coherent theories about distance education have been worked out.

All through the project, we will continue the clarification and the elaboration of the concept of distance education in relation to our interest area, drawing on relevant bodies of theory (cf Peters 73, Holmberg 81).

The TNP will try to analyze what it means to the process of education that, to a far greater extent than participation in distance education has to fit into the given life-form to a far greater extent than institutional education which is partly regarded as a life-form in itself.

On the basis of analyses of a wide range of distance education activities and of single institutions, we will frame a general idea of, e.g.:

- different institutional models of distance education and their objects,
- pedagogical concepts and their practical management as regards elaboration and distribution of education,
- the relation between the purpose and structure of the institutional organization, pedagogical concept and the concrete utilization of information technology.

The theory and practice of distance education will be a general theme of the project.

3.2 The dimension of educational politics and sociology

Education is a social phenomenon both at a micro- and a macro-level. The development of education systems, education institutions, and pedagogical models is combined with power relations, labour markets, and economic market trends. The participation in and the results of education are combined with the distribution of living conditions, the organization of the everyday life, and the courses of life.

Open learning and distance education as social phenomena are analyzed within the political and sociological dimension of the TNP project.

It is our intention - mainly at the macro-level - to analyze the role of open university models in the industrial countries in recent years. An important theme is to see what kinds of openness you are trying to realize through open learning models. Is openness e.g. understood as an overcoming of geographical barriers, as an overcoming of social barriers or as a solution of capacity problems, possibly combined with thoughts of reducing the expenses of the educations? Is the opening of the educations regarded as related to a specific kind of social development - as e.g. seen by the Minister of Education, Mr Bertel Haarder, who connects open learning with the development of an "open society" (Haarder 1987)? And do the results of open learning correspond to the intentions?

This part of the project is planned as a comparative survey and discussion of the development in a small number of industrial countries. Some of the questions that we will deal with are as follows:

- The role and importance of open learning/distance education in the education system.

- Which actors have especially influenced the development of open learning, and what were their intentions?
- Which kinds of distance education have been introduced, and which kinds of technology are being used and being staked on?
- How many and who are using open learning, what kind of educational "careers" do they pursue, and what effects have been perceptible?
- The relation and the interaction between general and vocational elements in open learning.

The main stress will be laid on education at a higher level. The work will take place as an elaboration of the existing material.

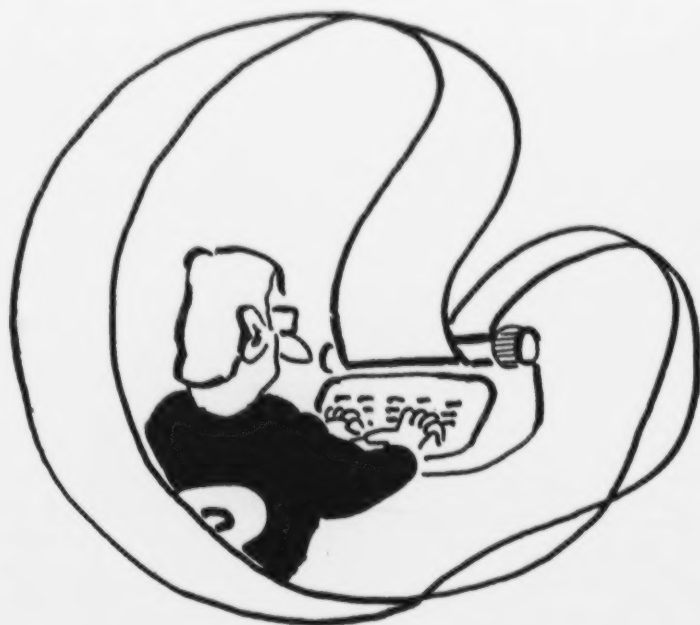
In this part of the project, we will also attempt to go carefully into already existing analyses of patterns of access, study and effect in open learning. Such analyses are closer to the micro-level and have clear connecting lines to the communicative and the pedagogical dimension of the project. Therefore, it is also our intention to carry out sociological analyses, where the starting point of new investigations will be existing research results. These analyses will deal with questions like:

- Which new forms of equalities and inequalities are created by the new educational technologies, especially when used in distance education?
- Who are able to and who will use the new opportunities of open distance education?
- Which are the motives of the different groups for participating?
- Which are the consequences of participating in open learn-

ning - seen in a long-term career perspective?

- In which ways and with which effect is open learning integrated in the on-the-job training of companies?

On the basis of e.g. the sociological studies, the project will try to develop new evaluation models for distance education. These models are supposed to combine sociological and pedagogical aspects.



3.3 The pedagogical dimension of the project - project pedagogy

We have chosen project pedagogy - the pedagogical concept of the Danish university centres - as the general framework of the pedagogical studies of the TNP.

Analogously with the growing acceptance of the new university centres, their pedagogical concept, the project pedagogy, has come up against various problems.

Outside factors (the situation of resources) have actively contributed in creating and shaping these problems. But a lot of the problems seem to have been related to the model of project pedagogy as such: the gradual ritualising of the ways of educating, the changed expectations of participants, the tendency of the learning processes to become more and more instrumental, and the growing focusing on ritualized demands of evaluation rather than on the wish of "learning" in a dynamic interaction with the reality.

The application of the new communication technologies within a framework of project pedagogy can thus not be unambiguously described as an innovative strengthening of a method of study free of problems. Therefore the introduction of EDP in education calls for a further development of the project pedagogy - both of its theoretical basis and of its practical management.

Seen from the viewpoint of technology, it is not only a question of the implementation of a neutral technology in the pedagogical organization. On the contrary, it is a question of implementing technologies which in their innate communication structures and pedagogical concepts may or may not harmonize with the basic ideas of an existing pedagogy.

Within the new communication technologies, we are especially

interested in studying systems of computer mediated communication, and their possible benefits for learning processes and project pedagogical practice.

Seen from a learning and knowledge point of view, the characteristic feature of computer mediated communication systems is that they increase and improve the conditions of the individual of obtaining information communicated linguistically, and they also support communication in the written language between the students themselves and between the students and the teachers.

The formulation and exchange of knowledge in the written language is already a central tool for knowledge development in traditional "face-to-face" project work, but we expect that the presence of the new electronical facilities will increase the extent of written knowledge and written communication. In this connection, we wish to examine the characteristic features of this new way of communication and its possibilities as a tool in knowledge formulation and knowledge development.

Summing up, you can say that the studies within the pedagogical dimension of the project aim at developing a new project pedagogical model which includes the new communication technologies - a model which can, with different adaptations, be used in distance education at all faculties.

The formulation of such a model is built on:

- An investigation of the theoretical foundations and further development of project pedagogy aiming at illustrating to which extent the new communication technologies can contribute to the overcoming of some of the problems of project pedagogy - especially when used in the distance education (Peters 73, Habermas 81, Olesen 85, Borgnakke 83 and 84, and Engeström 87).

- A study of how the new communication technologies - especially computer mediated communication systems - influence the learning processes of the students (Negt 77 and Vygotsky 82). This will take place e.g. on the basis of case studies of distance education courses at a university level - courses which use computer mediated communication systems, tutorials, etc (Lorentsen 88, Kaye 85, and Hiltz 86).



3.4 The communicative dimension of the project

The general basis of the studies within the communicative dimension of the project is a curiosity of uncovering whether the communication needs and the communication actions which characterize distance education can be supported constructively through the new communication technologies.

Is it possible that the existing communicative needs can be met in a better way with the new technologies? Which kind of communication, if any, is promoted, respectively hindered by electronic communication in distance education? How is relevant use of electronical communication learned? How should the communication technologies be integrated in and harmonize with other kinds of media in distance education?

Generally, there is still today no common communicative etiquette or norm for electronical communication (Hiltz 84). The TNP will try to contribute to the formulation of a such.

Apart from this, the "electronical communication" area is today in lack of a coherent basic theory. The TNP will try to make one.

Theoretical studies

The communication theory part of the project will start with studies of the concept of *communicative competence* (e.g. Andersen/Riisager 81, Campell/Wales 70, Hymes 72, and Habermas 71, 81, 84) aiming at a clarification of this term and by this decide the concept's value in contexts of electronical communication.

Besides the theoretical studies of communicative competence, we will deal with theoretical studies of different kinds of non-electronic communication.

The aim is to be able to characterize and understand on one

hand specific aspects of electronical communication and on the other hand aspects related to other ways of communication.

Here we will include:

- communication in the traditional classroom,
- communication in the traditional meeting,
- conversation in face-to-face communication,
- writing traditions as regards schools and letters.

Communication in distance education

Concurrently with the attempt of illustrating the electronical communication from a theoretical point of view, we will also deal with communication in relation to distance education in general.

This will be done by analyzing existing communication needs in distance education and the possibilities of transforming these to communicative action within the given framework of today. The basis of these analyses will be Danish and foreign cases.

The connection between communication and distance education will be examined on the basis of the hypothesis that within distance education there exist both *general* communication needs and communication needs which are *specific* to different types of distance education and to different types participants of distance education.

These communication analyses should be seen as an attempt of elaborating the theory of distance education generations which has often been stated (Olesen et al 85).

EDP as a communication tool

As an elaboration of the central questions from the theoretical studies and from the studies of distance education communication as such, we will analyze selected concrete courses which apply EDP as a communication tool.

First and foremost, we will focus on Jutland Open University's application of computer mediated communication systems (Loretsen 88). These studies have been started during the research project called PICNIC. They will be continued under the auspices of the TNP.



3.5 The dimension of teaching and study in different subject areas

We will study selected issues in the teaching of different subjects, in relation to new technology in distance education. This will be done within the following fields:

- The teaching of engineering
- The teaching of social sciences
- The teaching of foreign languages

These three areas differ as regards the extent of the fields which they cover. Engineering and social sciences as such seem to be quite wide areas to subject to common considerations and analyses of pedagogy. However, within both areas, it is our intention to study questions which cut work across the individual disciplines.

Differences in the extent and the areas to be studied thus corresponds to differences in strategies of investigation.

3.5.1 The teaching of the engineering

Which distance education technologies can with profit be applied within the communication of technical-scientific knowledge? This is a burning question both as regards further education of engineers but also as regards a communication of parts of the traditional engineering curriculum in open learning.

But what is supposed to be communicated? - The knowledge contents of engineering education have developed concurrently with changed social demands on the knowledge and the work of the engineer. As an example, two developments can be traced:

increased extent of social science knowledge and increased application of EDP-based technologies.

The pedagogical organization of the engineering education has, however, not developed correspondingly. At the vast majority of institution engineering education both in Denmark and internationally, a traditional teaching method split in disciplines (lectures and class teaching with exercises) is used. AUC may be the only university which applies a problem-oriented, cross-disciplinary and project organized education method of study.

In an investigation of the development of the qualifications of engineers (Jakobsen 84), it is pointed out that the engineers are not sufficiently able to transform their knowledge from theory into practice.

From business the AUC has obtained some response to the qualifications of the engineers educated at this university. This indicates that to a larger extent the project work method has enabled the AUC-engineers to transform their knowledge from theory into practice and to live up to the new demands of being able to analyze and evaluate technology in relation to society. This is due to the fact that the engineers as students have been conscious of the purpose and the use of a given technology through problem-orientation and that they have learned to understand links between the development of society and the development of technology (Müller, Remmen, and Christensen 84).

Through the project pedagogy, it has been possible to exceed the traditional limited technical knowledge which is isolated from social ways of presenting the problems - (Skovsmose 81 and Niss 84) and instead reach new cross-disciplinary methods.

These important aspects of this project will therefore be knowledge, pedagogy and distance education. Special attention will be paid to a valuation of which distance education technologies

(computer mediated communication, interactive video, satellite supported education etc) could support a project organized communication within engineering education and further education of engineers. We are aiming at developing a pedagogical valuation model.

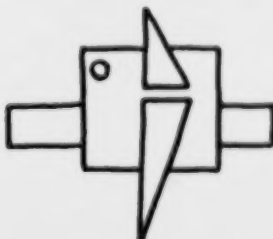
Some central questions will be:

- Which development has happened in the knowledge contents of engineering education?
- What kind of project pedagogy has been developed in the engineering education at AUC?
- Which distance education technologies is it possible to apply in order to support project work in the communication of engineering knowledge?

In this connection, the project will attach great importance to a valuation of earlier distance education activities both within the technical-scientific educations and within further education of engineers. As there are still only few activities in this area, the project will include both Danish and foreign material.

The TNP will maintain cooperation with the Department for Technology and Society (the Fats-group) at the AUC.

Furthermore, we will form a broadly composed background group at the faculty technical and natural sciences in order to discuss distance education within engineering education.



3.5.2 The teaching of the social sciences

The social science area attracts interest as a communication area because - within one and the same subject area - you often have to communicate approaches ranging from analyses of causal relations to a hermeneutic interpretation of the meaning of behaviour.

Three of the main problems of using project pedagogical principles in the communication and the social sciences have turned out to be: *empirical knowledge, the management and theory and models, and progression in subject-matter.*

Project pedagogy often demands new empirical investigations. It can not be claimed that such a demand has been satisfied. On the contrary in the projects of today, you can see a wide re-use of ways of presenting problems and information sources.

Data bases contain perspectives for improving this situation:

- Access to large, more up-to-date bodies of data, which are available in different degrees of processing and which therefore make different demands to the user.
- Possibilities of being able to construct data bases yourself from specific interests and relevance criterions.
- Increased possibilities of combining qualitative and quantitative data (Kristensen 86) and possibilities of using qualitative data systematically.

In many projects, there is a tendency of perceiving social scientific *models* as "works of literature", towards which you can be either critical or applauding.

The concept of "theories as thinking tools" is more difficult to carry through in searching, even though it is certainly a main point in project pedagogy.

Here, it is reasonable to presume that the possibilities of model simulation, which have been available within the educational sector during recent years, will contain great pedagogical perspectives.

Model simulation intensifies the attention towards the model's area of application and towards which limits you can reasonably establish for acceptance/rejection of the model (Bowler 81).

Usually, *progression* in studies is seen as a sequence of curriculum elements. This traditional way of perceiving the progression is however contrary to the fact that the triangle: proble-theory-empiric of knowledge (including especially the *relations* between the three elements), in principle forms the centre of the project pedagogy. Progression should therefore have something to do with a still more developed relation between theory and empirical knowledge.

However, the understanding what such a progression implies and demands of the learning processes is, requires an increased knowledge of the application of models in our thinking on the social reality (social cognition), in general, and knowledge of how the curriculum progression within different social-professional areas is created through the gradual implementation of theoretical models in more common sense based models (Hollyard/Gordon 84).

Such studies are obviously very important to e.g. the development of EDP-based simulation models as pedagogical tools.

Based upon the outlined problem areas, it is the project's purpose to supply input to the development of relevant peda-

gical kinds of distance education within the social sciences - with special reference to the application of simulation models, data bases, expert systems, and interactive video.

In the light of this development of pedagogy the aim of the project is to design and develop a teaching system to be used by each student in distance education.

The system will be built up around a hypermedium with weight upon an interactive user interface and graphic presentation and preparation of data. Possibilities of working with free text, diagrams, pictures, internal and external data bases as well as models of simulation will be given. The system will be used as a case on social medical ways of presenting the problems which are part of broad social scientific educations as well as commercial and adult education aimed at the social and health sector. The system will be tested in actual teaching where the distance education is integrated in framework of project pedagogy.

The experience obtained from design, development and testing will be used in the TNP-projekt generally in order to estimate the possibilities of the EDP-based technologies to support the project pedagogy within distance education.

Furthermore, the project aims at developing a pedagogical *evaluation model* for distance education within the social sciences, which - to an "interesting extent" - uses new education technology of the above kind. In this connection, it is possible that the project will include concrete development and evaluation areas, e.g. further training courses arranged under the auspices of the AUC.

3.5.3 The teaching of foreign languages

The studies within the area of foreign languages will be in a natural continuation of the studies within the communicative dimension of the project (cf paragraph 3.4). The central area will be a study of to which extent and how the new communication technologies can be utilized in order to support *communicative competence* as object of learning in foreign language studies organized as distance education.

The teaching of foreign languages in distance education is a relatively unexplored area. Both nationally and internationally, the foreign languages have been regarded as "difficult" subjects to transform into distance education because of the central role of practical mastery of language in every foreign language study. Therefore, even a large institution as e.g. the Open University in England has not the extended foreign language element within its distance courses for the time being.

However, there is an increasing interest in developing distance studies of foreign languages internationally. This must of course be seen in connection with the radical internationalization taking place these years (among other things through the new communication technologies). Concretely, both under the auspices of Erasmus and within the European Association of Distance Teaching Universities (EADTU), there has been taken an initiative in establishing research groups, which have to study the possibility of developing foreign language courses in distance education.

In Denmark, there is some experience in foreign languages as distance studies within the Open University. Within Jutland Open University there are at the time being distance studies in German, French, English, Italian, Polish, Russian, and Serbo-Croat.

The distance courses in foreign languages within the Jutland Open University make up a possible object for empirical study which will be included in this project as a fruitful supplement to theoretical studies in this area.

Theoretically, the foreign language part of the research project has to pursue questions which cut across the single foreign languages.

The theoretical studies come within the following areas:

- Studies of the concept of communicative competence and its application in connection with foreign languages. These studies will in fact extend the communicative competence studies within the communicative dimension of the project (Dietrich 79, Neuner 82, and Piepho 74 and 79).
- Studies of communication strategies in foreign language learning. In this connection, works of Claus Færch and others will be included - works which have their source in the research project called PiF (Project in the Teaching of Foreign Languages) at the University of Copenhagen (Færch 79 and Kasper 83).

The theoretical studies within these areas are to be basis of an evaluation of which tools the foreign language students have to have at their disposal in order to be assisted in the language learning processes in connection with distance education. Likewise, the theoretical studies are to be basis of the degree and how the communication technologies can (be brought to) offer such facilities.

In this connection, the possibilities of different new medias in relation to the foreign language studies at a distance base will be analyzed, namely computer mediated communication systems, EDP-language programmes in general, interactive video, and TV/video (perhaps via satellite).

4. Conclusion

As mentioned, distance education as such and the application of distance education technology are relatively unexplored areas in Denmark.

With the increasing importance of distance education within adult education, there is, however, a need for an increased research contribution within this area. The TNP is part of the development of Danish research into distance education and the application of technology in distance education. The need for research into education and technology is also reflected in the proposal of the Research Council for the Humanities for a strategy plan, in which it is said that:

"For research into education and teaching, information technology has become a central research area demanding large contributions in order to fulfil the demands of the society for education and teaching today.

A special impulse to the development of insights in the relation between education, teaching, and information technology is in the importance of the adult education today and in the future, because the qualifying demands for labour and for active citizenship are changing in a tempo which demands a bringing up-to-date of knowledge and qualifications for the adult throughout life. This is a very important task both as regards resources and pedagogy. It demands new insights, command of new techniques, modern thoughts. Above all, it demands a use information technology for education and teaching purposes." (Humanistic Research. Tradition and Renewal. Strategy and action plan for the Research Council for the Humanities, the Research Department 1989, page 84).

Internationally, many new initiatives are developing cross-national education systems these years (e.g. various EC-initia-

tives, initiatives under the auspices of the European Association of Distance Teaching Universities (EADTU), and the American distance education university called Connected Education, which has already today students from several continents and whose visions are to establish a "University of the World" through technology.

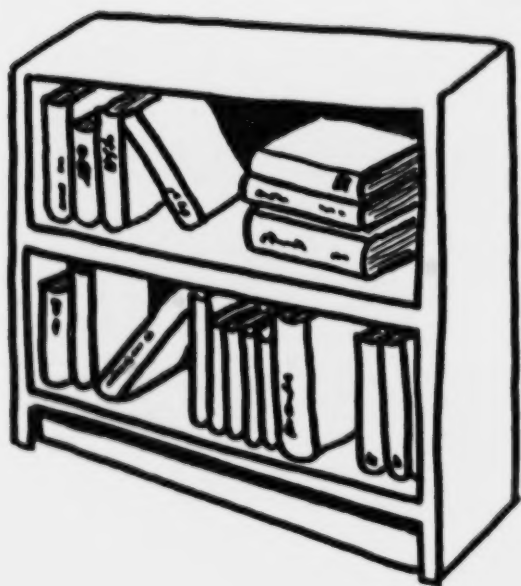
In such a context, it is - seen in the perspective of Danish educational policy - very important to establish research which can participate in the discussion and the development of distance education and open learning on the basis of a Danish educational tradition and Danish pedagogical development. The TNP wishes in that way to participate in influencing the development so that in the future, the framework will not be determined by technology, but by suggestions of the pedagogical considerations. Technology ought to live up to and adapt to the pedagogical demands.

However, apart from thorough evaluations, this requires active suggestions from the researchers concerning pedagogically founded demands for the new technology. It is the intention of the TNP to contribute such suggestions.

By this the TNP represents an "offensive, technology-innovative" approach to education in information technology - an approach which is also officially judged to be proceeded within a future pedagogical research contribution:

"So far, especially, the pedagogical research into information technology has mainly been about distinguishing between contexts and ways in which information technology could and should be applied in the education, and in which contexts and in ways, in which it should be kept out of the way. In the general object of a future pedagogical research contribution, a formulation of demands for the development of information technology from pedagogical criterions should, however, be included;

great importance ought thus to be attached to an offensive, technology-innovative element besides the defensive, the evaluating, and the teaching-adapting elements which have been the most pronounced elements in the research up till now." (Humanistic Research. Tradition and Renewal. Strategy and action plan for the Research Council for the Humanities, the Research Department 1989, page 85).



Literature

Andersen, H./Riisager, K.: Kommunikativ kompetens. Serie om fremmedsprog nr. 20. Aalborg Universitetsforlag, 1981. (*Communicative competence. A series of foreign language No. 20. Published by the Aalborg University Centre, 1981*).

Borgnakke, Karen: Projektpædagogikken gennem teori og praksis. AUC, 1983. (*Project pedagogy through theory and practice. The University Centre of Aalborg, 1983*).

Borgnakke, Karen: Om sproglig-pædagogisk basisuddannelse. Jysk Åbent Universitet/AUC, 1982-1984. Delrapport I-II 1984, (upubliceret). (*On linguistic-pedagogic foundation course. The Jutland Open University/the University Centre of Aalborg, 1982-1984. Part-report I-II 1984 (not published)*).

Bowler, T.D.: *General Systems Thinking. Its Scope and Applicability*. New York, 1981.

Campbell, R./Wales, R.: *The Study of Language Acquisition*. In Lyons, J. (ed): *New Horizons in Linguistics*. Penguin, 1970.

Dietrich, I.: *Kommunikation und Mitbestimmung im Fremdsprachenunterricht*. Scriptor, 1979.

Engeström, Y.: *Learning by expanding*, 1987.

Færch, Claus: *Research in Foreign Language Pedagogy - the PIF project*. In *Anglica et Americana* 7. Copenhagen: Department of English, Copenhagen University, 1979.

Haarder, Bertel: Åben uddannelse i et åbent samfund. Temanummer af Uddannelse, nr. 7. København, 1987. (*Open learning*

in an open society. Theme issue of "Uddannelse", No.7. Copenhagen, 1987).

Habermas, J.: *Vorbereitende Bemerkungen zu einer Theorie der kommunikativen Kompetenz*. In Habermas, J. und Luhmann, N.: *Theorie der Gesellschaft oder Sozialtechnologie*. Frankfurt am Main, 1971.

Habermas, J.: *Theorien des kommunikativen Handelns*. Bände 1-2. Suhrkamp, Frankfurt am Main, 1981.

Habermas, J.: *The theory of communicative action*. Volume 1: Reason and rationalization of society. Heinemann London, 1984.

Hiltz, S.R.: *Online Communities*. New Jersey, 1984.

Hiltz, S.R.: *Evaluating The Virtual Classroom*. (Revised and Updated Plan). New Jersey, 1986.

Holmberg, B.: *Studies and Trends of Distance Education*. Kogan Page, London, 1981.

Holyard, K.J./Gordon, P.C.: *Information processing and social cognition*. New Jersey, 1984.

Humanistisk Forskning. Tradition og fornyelse. Strategi- og handlingsplan fra Statens Humanistiske Forskningsråd, Forskningsdirektoratet, 1989. (*Humanistic Research. Tradition and Renewal*. Strategy and action plan from the Research Council for the Humanities, the Department of Research, 1989).

Hymes, H. Dell: *On communicative Competence*. In: Pride, J.B.-/Holmes, J. (eds): *Sociolinguistics*. Penguin, 1972.

Jakobsen, Arne et al: Udviklingstendenser i ingeniørarbejdet 1-5. Teknisk Forlag, 1984. (*Tendencies of the development in engineering 1-5*. Published by "Teknisk Forlag", 1984).

Kasper, Gabrielle (ed): *Learning, teaching and communication in the foreign language classroom*. Århus, 1983.

Kaye, T.: *Computer Conferencing for Education and Training*. Project Report CCET/1. Unpublished. Open University, Milton Keynes, 1985.

Keegan, D.J.: *On defining distance education*. In Sewart, D. et al: *Distance Education*. London, 1983.

Kristensen, O.S.: *Kvalitative studier og edb*. Århus, 1986. (*Qualitative studies and edp*. Århus, 1986).

Lorentsen, Annette: Præsentation og analyse af "Projekt datamatstøttet fjernundervisning" - et udviklingsprojekt på Jysk Åbent Universitet. PICNIC-NYT nr. 4. Aalborg Universitetscenter, 1988. (*Presentation and analysis of "Project computer aided distance education" - a developing project at the Jutland Open University*. Published in PICNIC-NYT No. 4. The Aalborg University Centre 1988).

Müller, Remmen og Christensen: Samfundets teknologi. Systime, 1984. (*The technology of society*. Systime, 1984).

Negt, O.: Sociologisk fantasi og eksemplarisk indlæring. Roskilde Universitetsforlag. 2. opl. 1977. (*Sociological fantasy and exemplary learning*. Published at the University of Roskilde. Second issue, 1977).

Neuner, G. (ed): *Kommunikativer Englishunterricht*. München, 1982.

Niss, Mogens: Kritisk matematikundervisning. Tekster fra IMFUFA nr. 84, 1984. (*Critical mathematics teaching. Texts from IMFUFA No. 84, 1984*).

Olesen, H.S.: Voksenundervisning - hverdagsliv og erfaring. Unge Pædagoger, 1985. (*Adult education - everyday life and experience. Published in "Unge Pædagoger", 1985*).

Olesen, K. et al: Datamater i den erhvervsrettede voksenundervisning, Århus, 1985. (*Computers in the adult education directed to the industry, Århus, 1985*).

Peters, O.: *Die diaktische Struktur des Fernunterrichts*. Basel, 1973.

PICNIC-NYT. Rapporter, arbejdsrapporter etc. fra forskningsprojektet PICNIC ved Aalborg Universitetscenter. Udgivet nr. 1-7 i 1987-1988. (*PICNIC-NYT. Reports, papers, etc from the research project named PICNIC at the University Centre of Aalborg. Nos. 1-7 have been published in 1987-1988*).

Piepho, H.-E.: *Kommunikative Kompetenz als übergeordnetes Lernziel im Englishunterricht*. Dornburg-Frickhofen, 1974.

Piepho, H.-E.: *Kommunikative Didaktik des Englishunterrichts*. Limburg, 1979.

Skovsmose, Ole: Didaktiske arbejdsrapporter 1-3. Gyldendals matematikbibliotek, 1981. (*Educational papers 1-3. Published by "Gyldendals Matematikbibliotek", 1981*).

Vygotsky, L.S.: Tænkning og sprog, Hans Reitzel, 1982. (*Thinking and language. Hans Reitzel, 1982*).

Presentation of the Participants of the Project

Ms. Annette Lorentsen

M.A. in German and Humanistic Computer Science. Furthermore, Danish Ling.merc. Master's Degree in German.

From 1976 to 1982 employed as instructor and assistant professor and from 1982 employed as associate professor in language and communication at the Institute of language and international culture studies. Has since 1983 also taught at the AUC's humanistic foundation course within the Jutland Open University.

Has during several years been vice-president of the steering committee for the Jutland Open University and a member of the central vice-chancellor college committee concerning the establishment of a Danish Open University.

Research into linguistic subjects, primarily in relation to German, and research into pragmatic text analysis in general. During recent years mainly research in relation to EDP into translation and new technology and into the application of computer mediated communication systems in distance education. Since January 1988 in charge of the research project called PICNIC (Project in Computer Networks in Distance Education Curricula) supported by the Research Council for the Humanities - a project on computer networks in distance education within further education.

Mr. Erik Laursen

M.A. in sociology from the University of Copenhagen 1974.

Associate professor in social psychology at the Institute of Social Relations and Organization.

Research into the areas of: education, pedagogy, occupational and youth culture, course of life and occupation and education choice, and mass media.

Mr. Palle Rasmussen

M.A. in Danish and psychology of language. Associate professor in the sociology of education at the Institute of Social Relations and Organization.

Has e.g. carried out research in the areas of: education and qualification, youth culture, strategies of educational politics, the relation between grammar school and its pupils, training of teachers and university pedagogy.

Ms. Lone Dirckinck-Holmfeld

M.A. in social subjects and psychology.

From 1984 graduate scholarship holder in informatics and pedagogy in the Communication Department at the University of Roskilde and from 1987 assistant professor in informatics and pedagogy in Humanistic Informatics at the Institute of Communication at the Aalborg University Centre.

Has primarily carried out research in the areas of informatics and education. Has among other things carried out research in technology evaluation and systems development in connection with different communication technologies - interactive video, computer-aided education programmes and computer mediated communication systems - in relation to basic pedagogical questions.

Has since January 1988 participated in the research project called PICNIC.

Ms. Anette Kolmos

M.A. in social subjects and psychology.

From 1985 to 1988 employed as graduate scholarship holder at the Technical-Scientific Faculty, Institute of Sociological Tendency and Planning, attached to the Department for Technology and Society (the Fats-group) with the project: Women's points of view in technical-scientific education. The project focuses three aspects: 1) Female and male engineer students' attitudes towards the study and the technology development, 2) The development of the perception of relevant technological knowledge, and 3) The contrast and the possibilities of a project-oriented pedagogical and traditional technical-scientific learning. Has during the same period developed an international network within gender, engineer education, and technology.

Ms. Bodil Brander Christensen

M.A. in social subjects and psychology.

Has practical pedagogical knowledge and experience from both the grammar-school and post-grammar-school level. Has previously been employed as instructor at both the social-scientific and the technical-scientific foundation courses at the Aalborg University Centre. From 1st September 1988 employed as research fellow at the PICNIC-project by the Humanities having research areas as: "Distance education, communication technology, and learning functions" and "Technology evaluation" - including analyses of the social background of the spread of open learning, distance education, and communication technology.

Mr. Jan Brødslev Olsen

M.A. in social subjects and psychology.

Has for several years been employed as a system analyst of EDP-systems for the health services. Has previously been employed as instructor at technical-scientific foundation course, humanistic informatics and communication at the Aalborg University Centre, in estimate of technology, development of systems and communication. Teaches psychology and social medicine in the social and health area.

From 1st October 1989 employed as research fellow with the following research area: pedagogical design of teaching programs for distance education.

